United States Department of the Interior

U.S. GEOLOGICAL SURVEY
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IN REPLY REFER TO:

NATIONAL WATER QUALITY LABORATORY TECHNICAL MEMORANDUM 1997.07

March 26, 1997

To: Chief, Office of Water Quality
Assistant Chief, Office of Water Quality
Assistant Chief Hydrologist for Technical Support
Regional Hydrologists
Chief, NAWQA
Chief, Office of Ground Water
Assistant Chief, Office of Ground Water
Chief, National Water Information System
Chief, Office of Hydrologic Research
Chiefs, Branches of Regional Research
Area Hydrologists
District Chiefs
Regional Water Quality Specialists
Assistant Regional Hydrologists for NAWQA
District Water Quality Specialists
Chiefs, NAWQA Study Units
Chief, Quality Water Service Unit, Ocala
Chief, Yucca Mountain Project
QA Manager, Yucca Mountain Project
Chief, Branch of Technical Development & Quality Systems
Employees, National Water Quality Laboratory

From: Peter F. Rogerson, Chief
National Water Quality Laboratory
Branch of Analytical Services

Subject: Replacement Chemical Oxygen Demand Instrumentation Operational

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Revision: None

Supplemental: None

SCOPE

Effective December 9, 1996, new instrumentation for Chemical Oxygen Demand (COD), Method I-3561-85, has been put into routine operation by National Water Quality Laboratory (NWQL)

personnel. Chemical methodology and reagents are unchanged from TWRI Method I-3561-85. To document the instrumentation changes, a new Lab Code (2144) and a new method code (340C) have been assigned. The method reporting limit remains at 10 mg/L. The bottle type and preservation remain the same as Lab Code 76 (LC0076).

BACKGROUND

TWRI Method I-3561-85 for COD determinations has used the same instrumentation and technology for the past 30 years. This instrumentation has been replaced with a Hach COD digestor and colorimeter system. The new system is considerably safer to operate than the old system and generates much less hazardous waste. The Hach COD system uses EPA-approved technology.

Because of instrumentation problems, any samples received by the laboratory after October 23, 1996, have been analyzed using the Hach COD system. Reruns will be analyzed by the Hach COD system. Samples received by the laboratory between October 23 and December 8, 1996, were held until the Hach COD system was approved for use.

NEW INSTRUCTIONS AND WHAT TO EXPECT

Lab Code 76 is no longer valid; use Lab Code 2144 instead. Please discontinue use of Lab Code 76 and instead label the COD sample bottles with the new 2144 lab code. Requests for Lab Code 76 will be transferred to the new lab code. Continue to collect samples for COD analysis in a 125-mL glass bottle, preserve them with sulfuric acid to pH <2, and chill the samples.

Data quality achieved with the Hach COD system is equivalent to or better than that achieved with the retired COD system. Precision measured for the Hach COD system, expressed in relative standard deviation (RSD), is shown in the table below. RSD charts are available on request from the author at the NWQL.

The Hach COD system will provide NWQL customers with equivalent or better data in a more timely and safe manner.

Samples with concentrations between 1 and 10 mg/L COD may be analyzed on a custom basis. Contact Glenda Brown (gebrown@usgs.gov) for further details.

PRECISION OF HACH COD SYSTEM

CONCENTRATION (mg/L)	PERCENT RELATIVE STANDARD DEVIATION
10-20	<20
20-50	<10
50-100	<5
>100	<3

Keywords: COD, chemical oxygen demand
Supersedes: None
Effect on Database: None
Distribution: See above plus the Netnews usgs.labnews & .water.quality; WRD Secretaries; Field and Project Offices; Hydrologic Technicians; and http: //wwwnwql.cr.usgs.gov/